

# The ACE Module in the Montana BRFSS, 2011

Carol Ballew, PhD  
Senior Public Health Epidemiologist



# MT BFRSS

- Joanne Oreskovich  
– Program Manager



# Surveillance

- Different than clinical burden
- Describes population status
- Total enumeration
  - Vital statistics
- Sample
  - BRFSS, YRBS, PNA



# Survey Samples

- Random
  - Gold standard ?
  - Everyone has equal chance to be included
  - Might miss small sub-groups



# Survey Samples

- Stratified
  - Allocate slots so all groups represented
- Weighted
  - Probability of being included
  - Number of similar people represented



# BRFSS Sample

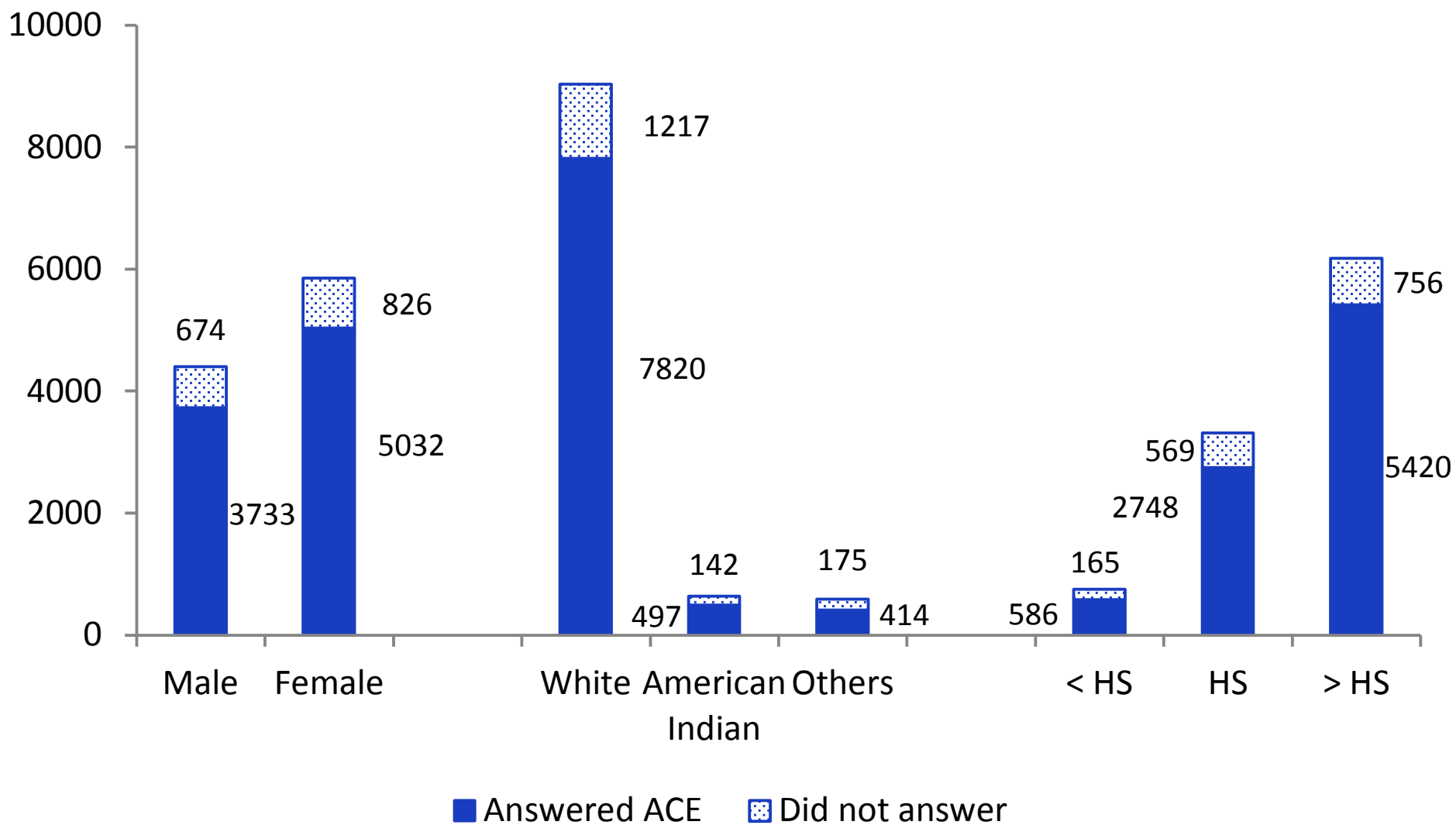
- Complex
- Stratified
- Weighted
- Landlines and cell phones in 2011
- Response rate 82% in 2011



# 2011 BRFSS Sample

- Adults  $\geq 18$  years
- Not institutionalized
- Not group living
- Residential landline
- Personal cell phone

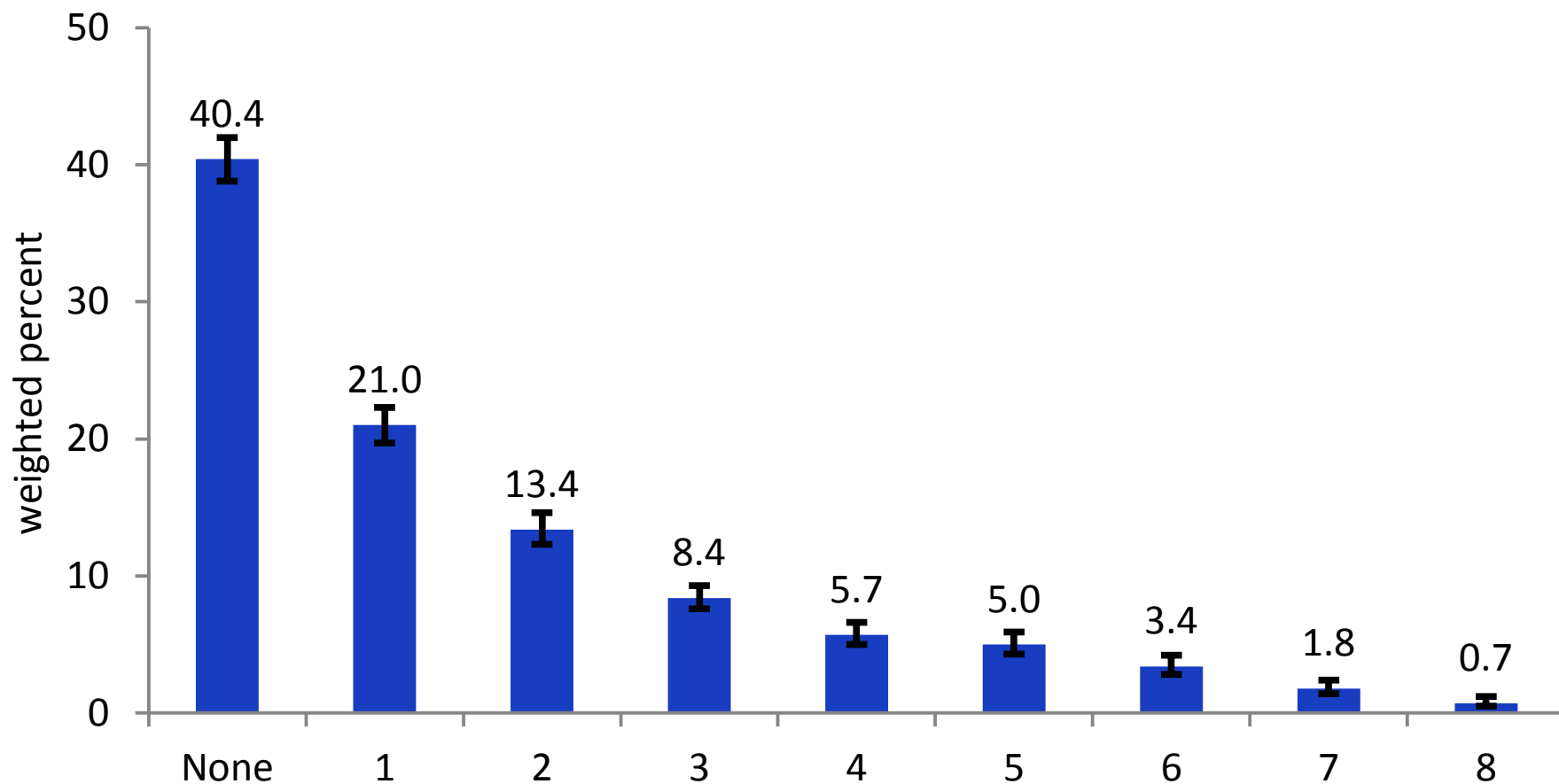






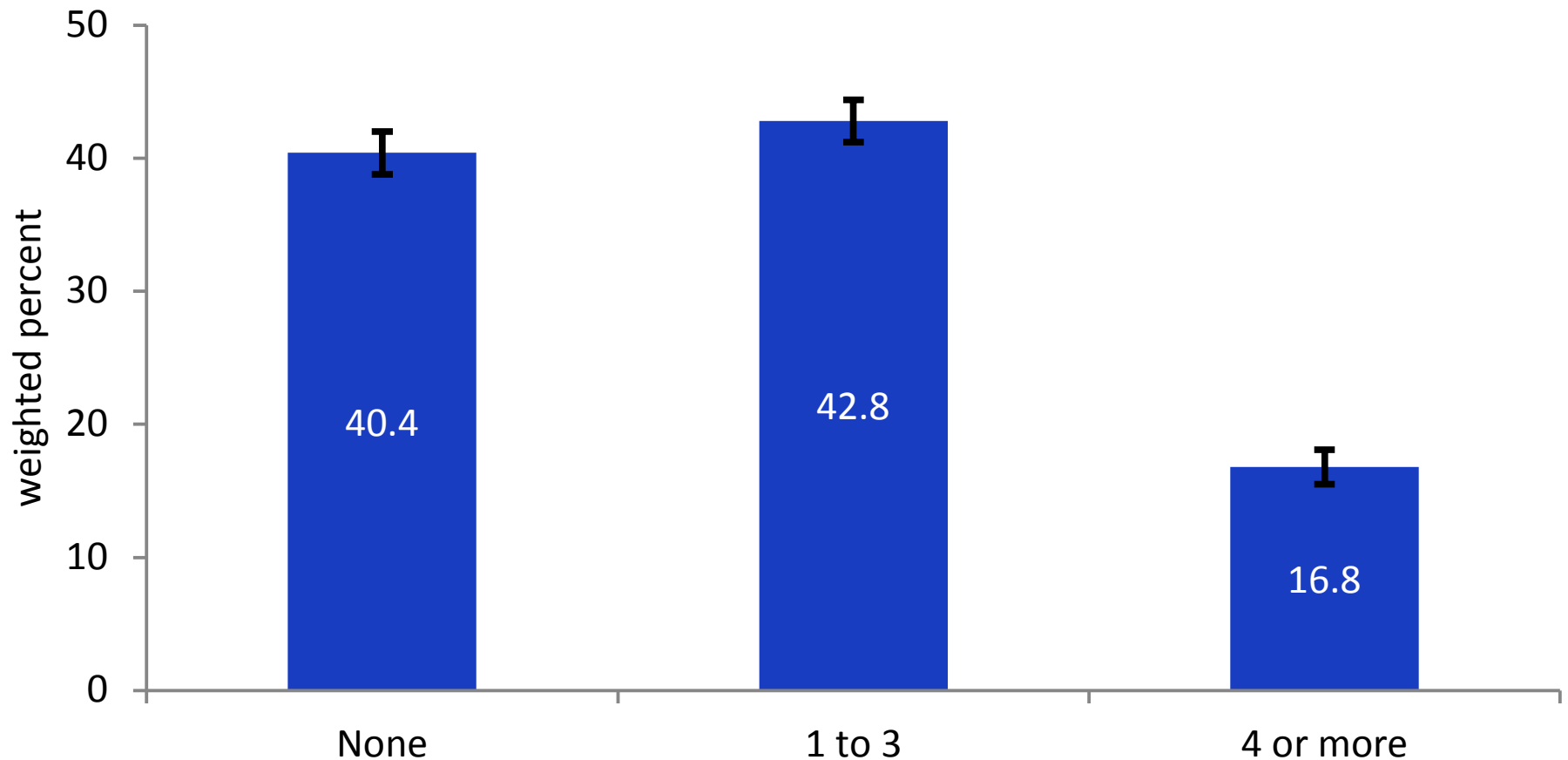
# Estimated Prevalence of ACE Scores

## Montana BRFSS, 2011

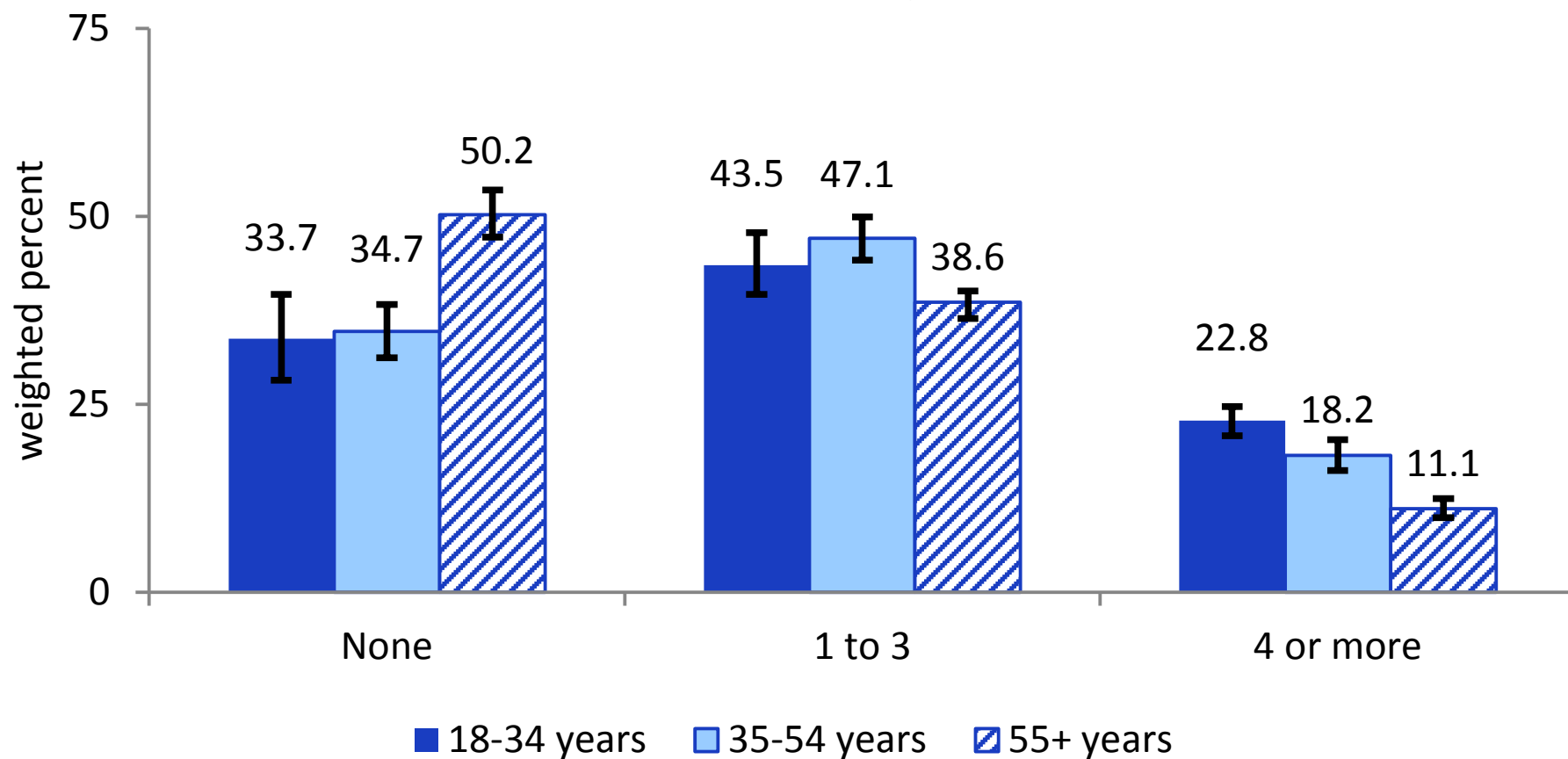


# Estimated Prevalence of ACE Scores

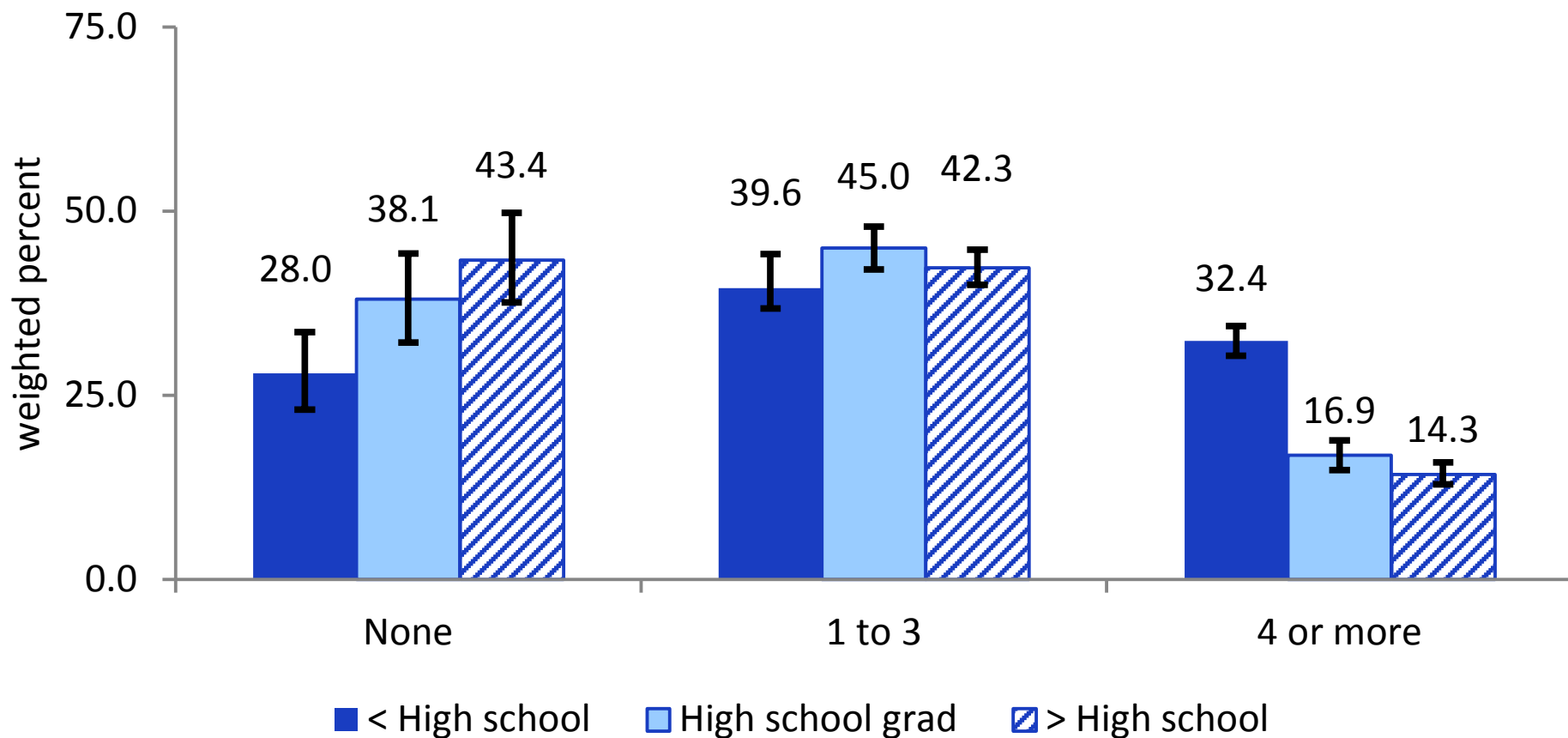
## Montana BRFSS, 2011



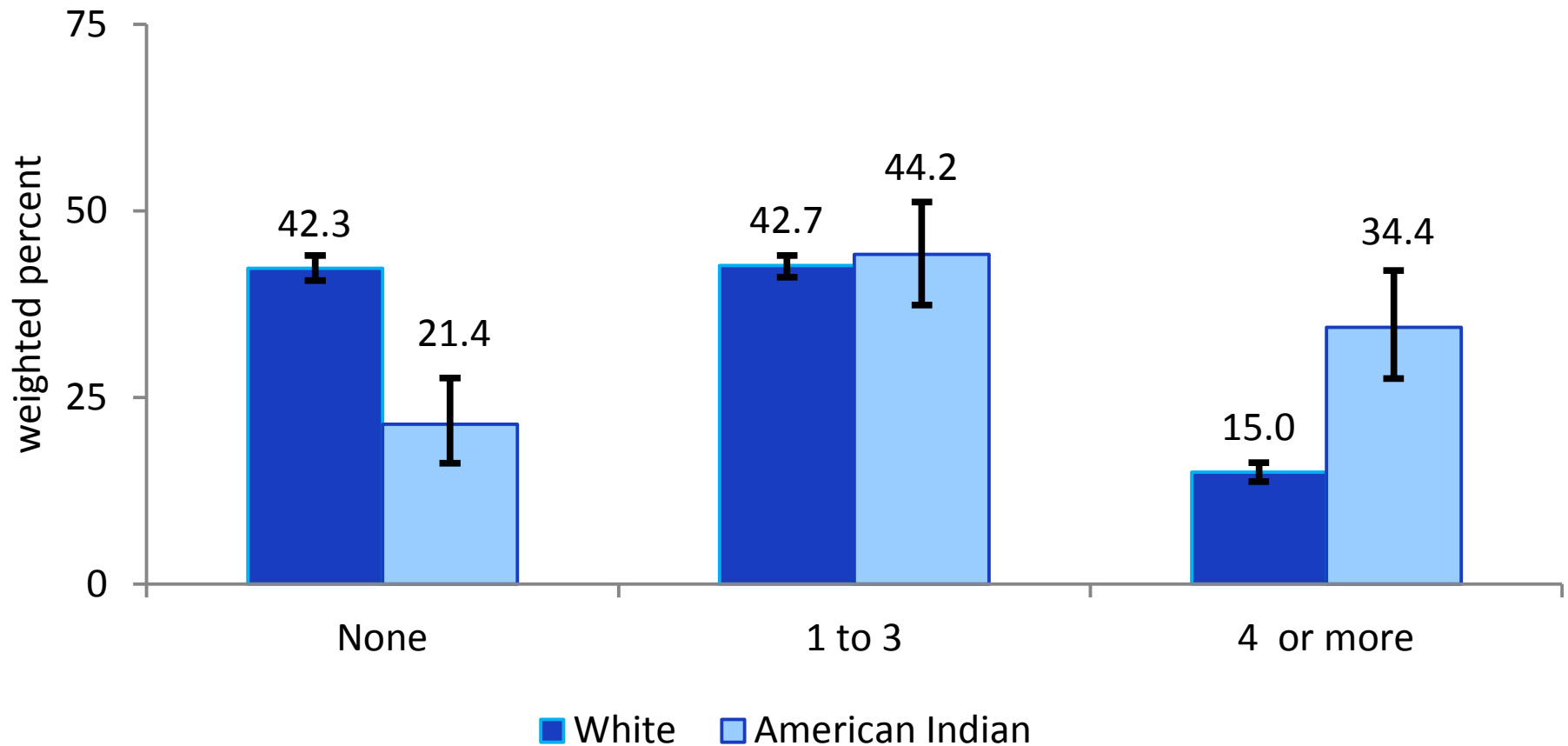
## Estimated Prevalence of ACE Scores by Age Group Montana BRFSS, 2011



## Estimated Prevalence of ACE Scores by Education Montana BRFSS, 2011



## Estimated Prevalence of ACE Scores by Race Montana BRFSS, 2011



# Adjusted Odds Ratios

- To look at association between
  - ACE score and endpoint
  - Controlling for things that are associated with both ACE and endpoint



# Adjusted Odds Ratios

- What is the association of ACE and smoking, controlling for age, sex, education, and race ?
- What is the association of ACE and heart disease, controlling for age, sex, education, race, and smoking?



# Adjusted Odds Ratios

- ACE score 0 is the reference group
- OR for ACE score of 4 or more and smoking = 4.2
- “People with ACE scores of 4 or more report that they smoke 4.2 times more often than people with ACE scores of 0.”





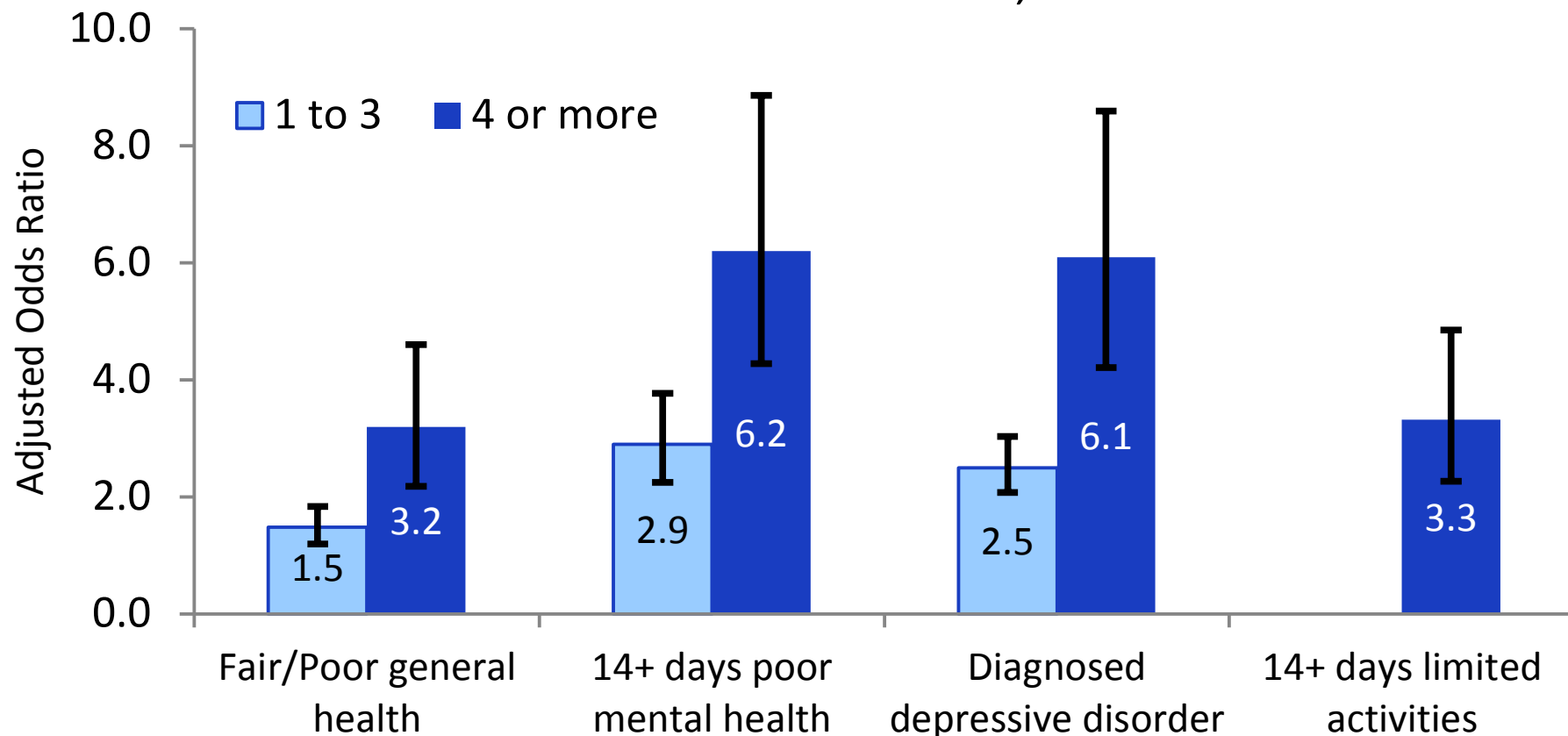
# Adjusted Odds Ratios

- Odds Ratios have Confidence Intervals
- $OR = 4.2$
- Lower CI = 3.2
- Upper CI = 5.4
- True value of OR lies between 3.2 and 5.4 with 95% probability



# Association Between ACE Score and Health Indicators

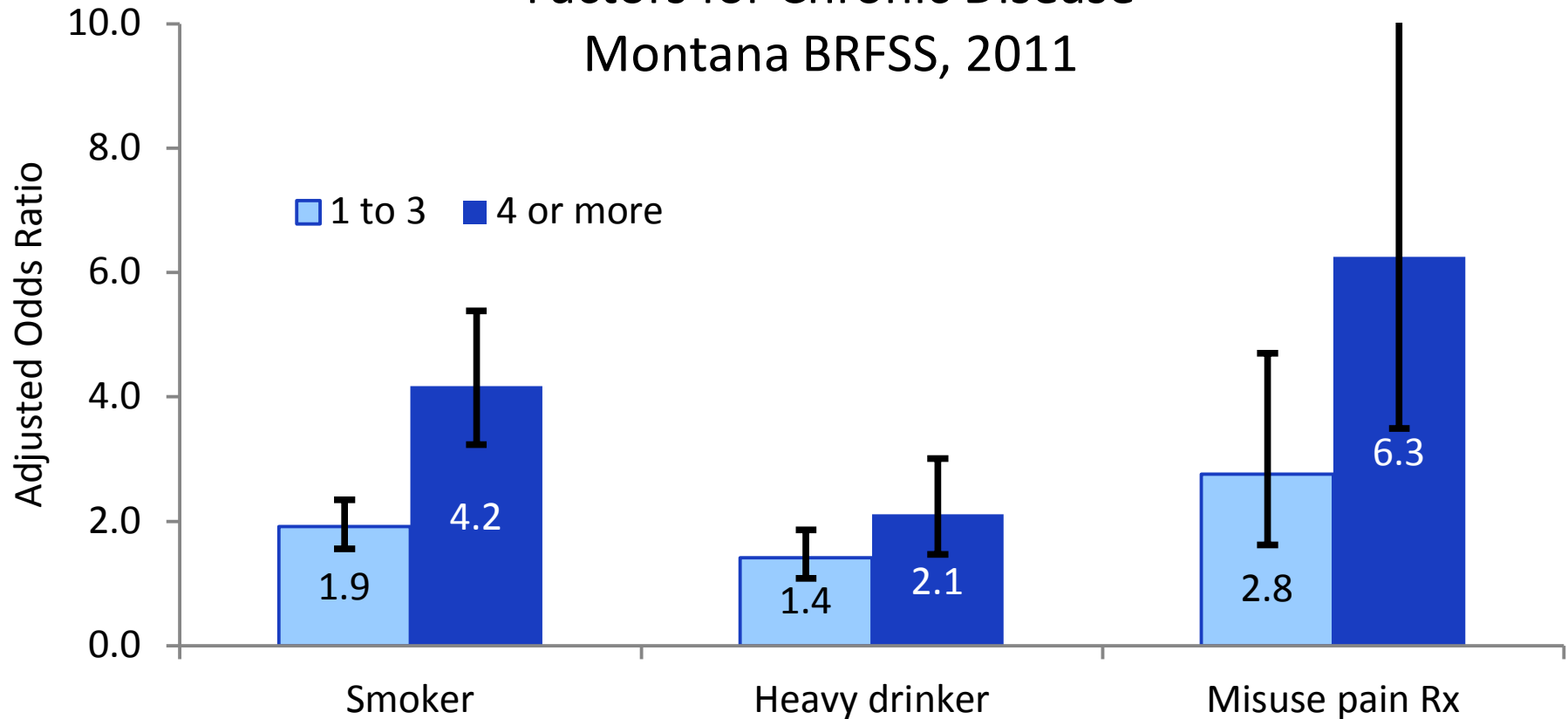
## Montana BRFSS, 2011



Adjusted for age, sex, race, and education.



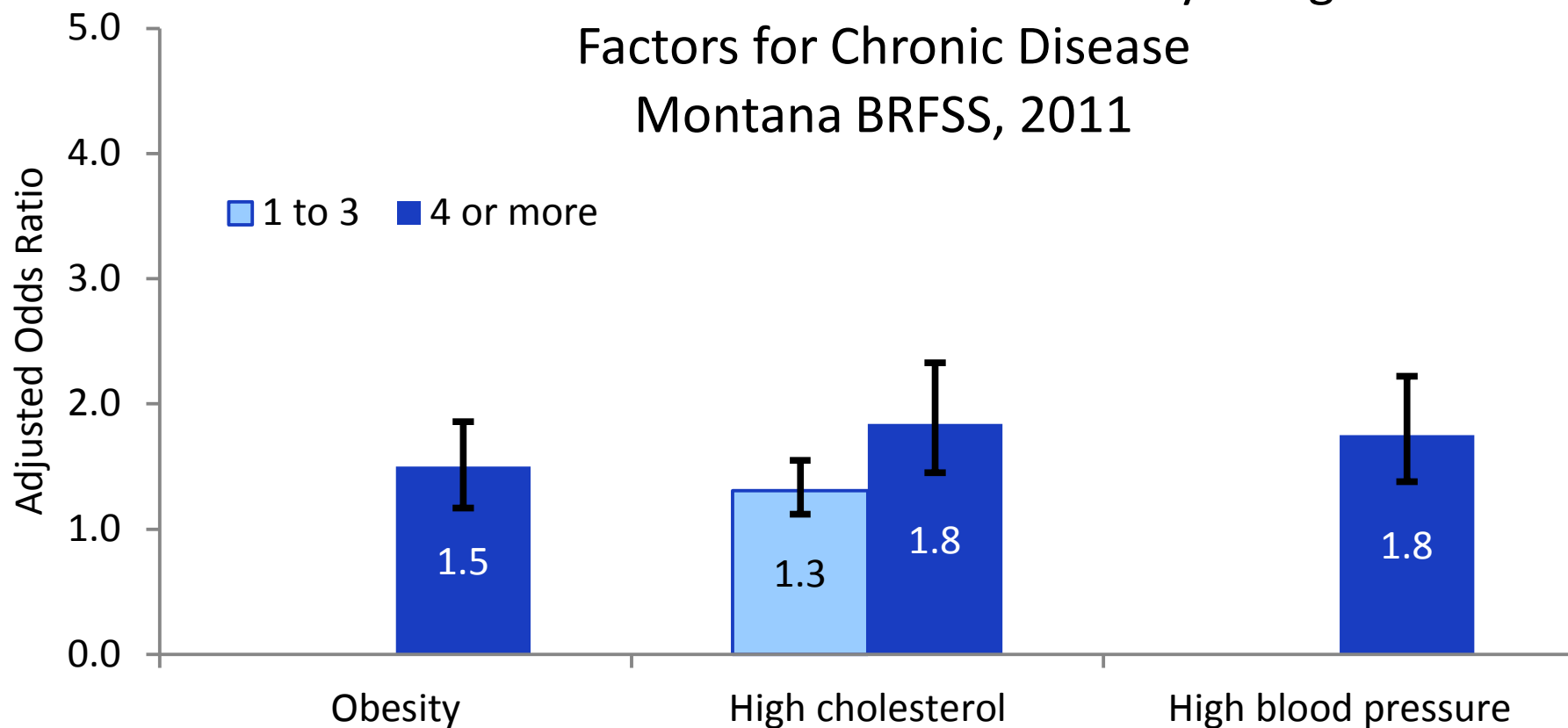
# Association Between ACE Score and Behavioral Risk Factors for Chronic Disease Montana BRFSS, 2011



Adjusted for age, sex, race, and education.



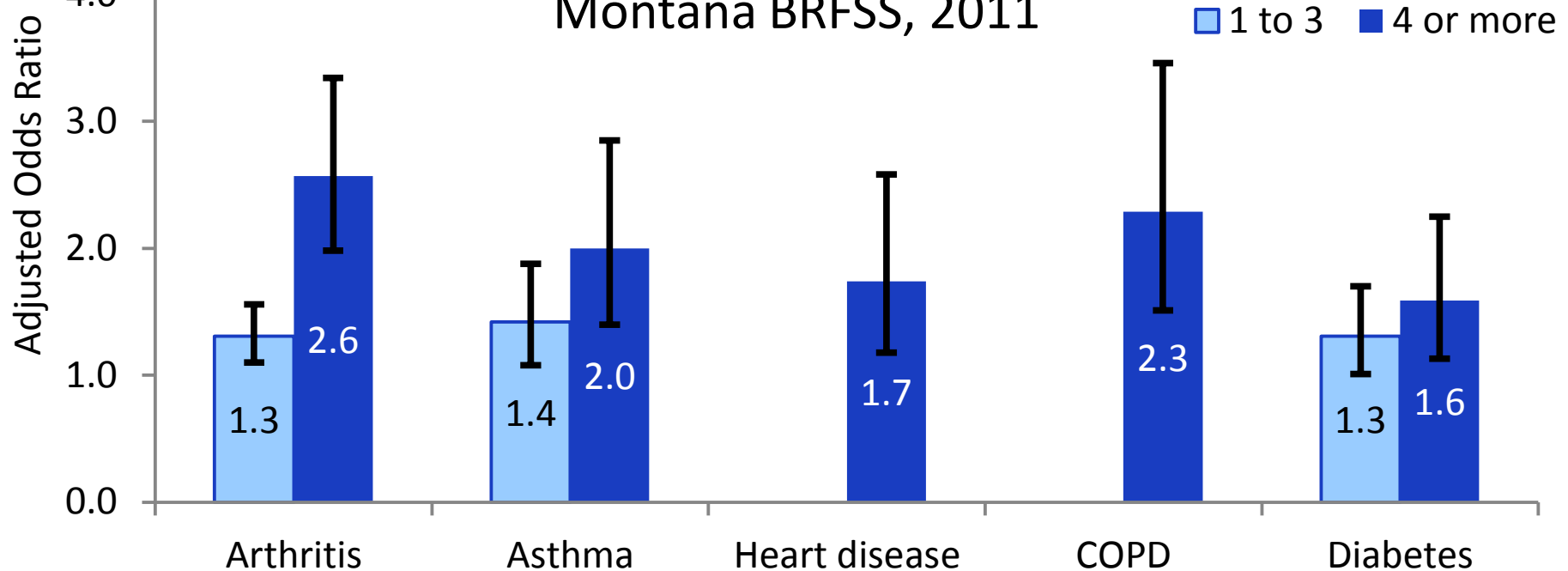
# Association Between ACE Score and Physiologic Risk Factors for Chronic Disease Montana BRFSS, 2011



Adjusted for age, sex, race, and education.



## Association Between ACE Score and Diagnosed Chronic Disease Montana BRFSS, 2011



Adjusted for age, sex, race, education, smoking, heavy drinking, obesity, high cholesterol, and high blood pressure



# Summary

- Montana's results are similar to
  - Kaiser Permanente
    - modified KP questionnaire
  - 17 other states' BRFSS results
    - slightly different analyses



# Summary

- ~ 55% - 65% reported at least 1 ACE
- ~ 17% reported 4 or more
- Consistent associations with
  - self-assessed mental, physical health
  - risky behaviors
  - physical risk factors
  - diagnosed chronic disease

